

Exhibit Name: Premium Calculation  
Exhibit Number: P11-1, Plan 01, 02, 03  
Record Name: Acreage  
Record Code: P11

Reinsurance Year: 2011  
Version: DRAFT  
Release Date: 9/30/2010

<u>Insurance Plan Code</u>	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion
<u>Commodity Code</u>	0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley

<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
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Section 1: Liability Calculation

Premium Guarantee Per Acre Amount = Approved Yield * Coverage Level Percent	Premium Guarantee Per Acre Amount	Internal		99999999.99	<p>If Unit of Measure equals Pounds "LBS", then round to whole number.</p> <p>If Unit of Measure equals Tons "TONS", then round to 2 decimals.</p> <p>Otherwise, round to 1 decimal.</p>	
	Approved Yield	P11	47	99999999.99	None	
	Coverage Level Percent	P14	33	9.9999	None	
<p>When Guarantee Adjustment Type Code equals Late Planting, "L" OR Prevented Planting, "P":</p> <p>Premium Guarantee Per Acre Amount * Guarantee Adjustment Factor</p> <p>Guarantee Per Acre Amount =</p>	Guarantee Per Acre Amount	Internal		99999999.99	<p>If Unit of Measure equals Pounds "LBS", then round to whole number.</p> <p>If Unit of Measure equals Tons "TONS", then round to 2 decimals.</p> <p>Otherwise, round to 1 decimals.</p>	
	Guarantee Adjustment Factor	P11	75	0.999	None	Edit with the Guarantee Adjustment ICE, "D00068".

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Price Election Amount = Projected Price * Price Election Percent	Price Election Amount	Internal		9999.9999	When Commodity Code equals 0015, 0018, 0078, 0116, 0255, 0257; <b>Or</b> 0043, 0047, 0049 with Reinsurance Year greater than or equal to "2001"; <b>Or</b> 0038, 0075 with Reinsurance Year greater than or equal to "2002"; then round to 4 decimals. Otherwise, round to 2 decimals.	Rounding rules can be validated with ARM, Price Calculation Factor, "A00
	Projected Price	ADM		99999.9999	None	Liability for Yield Protection, "01" allows the producer the opportunity to choose a percentage of the Projected Price. Liability for Revenue Protection, "02", or Revenue Protection with Harvest Price Exclusion, "03", requires the producer to choose 100 percent of the Projected Price. Edit with ADM Price, "00810".
	Price Election Percent	ICE		9.9999	None	Price Election Percent must equal 1.000, when Insurance Plan Code is Revenue Protection, "02", or Revenue Protection with Harvest Price Exclusion, "03". Edit with ICE Price Election Percent, "D00007".
Premium Total Guarantee Amount = Premium Guarantee Per Acre Amount * Price Election Amount * Reported Acreage	Premium Total Guarantee Amount	Internal		99999999.99	Round to 2 decimals.	
	Price Election Amount	Internal		9999.9999	None	
	Reported Acreage	P11	52	99999999.99	None	Reported Acreage must equal the sum of all Land, P27. Reported Acreage.

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Total Guarantee Amount = Guarantee Per Acre Amount * Price Election Amount * Reported Acreage	Total Guarantee Amount	P11	97	99999999.99	Round to 2 decimals.	
	Price Election Amount	Internal		9999.9999	None	
	Reported Acreage	P11	52	999999.99	None	Reported Acreage must equal the sum of all Land, P27, Reported Acreage.
Premium Liability Amount = Premium Total Guarantee Amount * Insured Share Percent	Premium Liability Amount	Internal		9999999999	Round to whole	
	Insured Share Percent	P11	48	9.9999	None	
Liability Amount = Total Guarantee Amount * Insured Share Percent	Liability Amount	P11	87	9999999999	Round to whole number.	
	Insured Share Percent	P11	48	9.9999	None	

**Section 2: Base Premium Rate Calculation**

Current Year Yield Ratio = Rate Yield / Reference Amount	Current Year Yield Ratio	Internal		9.9999	Round to 2	Cup at 0.50 and Cap at 1.50.
	Rate Yield	P15	38	99999999.99	None	
	Reference Yield	ADM		99999.99	None	Edit with ADM Base Rate, "A01010".
Prior Year Yield Ratio = Rate Yield / Prior Year Reference Amount	Prior Year Yield Ratio	Internal		9.9999	Round to 2	Cup at 0.50 and Cap at 1.50.
	Rate Yield	P15	38	99999999.99	None	
	Prior Year Reference Amount	ADM		99999.99	None	Edit with ADM Base Rate, "A01010".
Current Year Rate Multiplier = Current Year Yield Ratio ^ Exponent Value	Current Year Rate Multiplier	Internal		9999.99999999	Round to 8	
	Exponent Value	ADM		S99.999	None	Edit with ADM Base Rate, "A01010".
Prior Year Rate Multiplier = Prior Year Yield Ratio ^ Prior Year Exponent Value	Prior Year Rate Multiplier	Internal		9999.99999999	Round to 8	
	Prior Year Exponent Value	ADM		S99.999	None	Edit with ADM Base Rate, "A01010".

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Current Year Base Rate	<b>When Rate Method Code is Fixed, "F":</b>	Current Year Base Rate	Internal		9999999999.99999999	Round to 8	
	= Sub County Rate	Sub County Rate	ADM		99.9999	None	Edit with ADM Sub County Rate, "A01050".
	<b>When Rate Method Code is Additive, "A":</b>	Current Year Rate Multiplier	Internal		9999.99999999	None	
	= Sub County Rate + (Current Year Rate Multiplier * Reference Rate + Fixed Rate)						
	<b>When Rate Method Code is Multiplicative, "M":</b>	Reference Rate	ADM		9.9999	None	Edit with ADM Base Rate, "A01010".
	= Sub County Rate * (Current Year Rate Multiplier * Reference Rate + Fixed Rate)						
Prior Year Base Rate	<b>Otherwise:</b>	Fixed Rate	ADM		9.9999	None	Edit with ADM Base Rate, "A01010".
	= Current Year Rate Multiplier * Reference Rate + Fixed rate						
	<b>When Rate Method Code is Fixed, "F":</b>	Prior Year Base Rate	Internal		9999999999.99999999	Round to 8 decimals.	
	= Sub County Rate	Sub County Rate	ADM		99.9999	None	Edit with ADM Sub County Rate, "A01050".
	<b>When Rate Method Code is Additive, "A":</b>	Prior Year Rate Multiplier	Internal		9999.99999999	None	
	= Sub County Rate + (Prior Year Rate Multiplier * Prior Year Reference Rate + Prior Year Fixed Rate)						
	<b>When Rate Method Code is Multiplicative, "M":</b>	Prior Year Reference Rate	ADM		9.9999	None	Edit with ADM Base Rate, "A01010".
	= Sub County Rate * (Prior Year Rate Multiplier * Prior Year Reference Rate + Prior Year Fixed Rate)						
	<b>Otherwise:</b>	Prior Year Fixed Rate	ADM		9.9999	None	Edit with ADM Base Rate, "A01010".
	= Prior Year Rate Multiplier * Prior Year Reference Rate + Prior Year Fixed rate						

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Current Year Base Premium Rate =	When Unit Structure Code is equal to Optional Unit, 'OU' or Basic Unit, "BU":	Current Year Base Premium Rate	Internal		9999999999.99999999	Round to 8 decimals.	
		Rate Differential Factor	ADM		9.999999999	None	Edit with ADM Coverage Level Differential, "A01040".
	Current Year Base Rate * Rate Differential Factor * Unit Residual Factor	Unit Residual Factor	ADM		999.999	None	Edit with ADM Coverage Level Differential, "A01040".
	When Unit Structure code is Enterprise Unit, 'EU':	Enterprise Unit Residual Factor	ADM		9.999	None	Edit with ADM Coverage Level Differential, "A01040".
	Current Year Base Rate * Rate Differential Factor * Enterprise Unit Residual Factor						
	When Unit Structure code is Whole Farm Unit, "WU":	Whole Farm Unit Residual Factor	ADM		9.999	None	Edit with ADM Coverage Level Differential, "A01040".
	Current Year Base Rate * Rate Differential Factor * Whole Farm Unit Residual Factor						
Prior Year Base Premium Rate =	When Unit Structure Code is equal to Optional Unit, 'OU' or Basic Unit, "BU":	Prior Year Base Premium Rate	Internal		9999999999.99999999	Round to 8 decimals.	
		Prior Year Rate Differential Factor	ADM		9.999999999	None	Edit with ADM Coverage Level Differential, "A01040".
	Prior Year Base Rate * Prior Year Rate Differential Factor * Prior Year Unit Residual Factor	Prior Year Unit Residual Factor	ADM		999.999	None	Edit with ADM Coverage Level Differential, "A01040".
	When Unit Structure code is Enterprise Unit, "EU":	Prior Year Enterprise Unit Residual Factor	ADM		9.999	None	Edit with ADM Coverage Level Differential, "A01040".
	Prior Year Base Rate * Prior Year Rate Differential Factor * Prior Year Enterprise Unit Residual Factor						
	When Unit Structure code is Whole Farm Unit, 'WU':	Prior Year Whole Farm Unit Residual Factor	ADM		9.999	None	Edit with ADM Coverage Level Differential, "A01040".
	Prior Year Base Rate * Prior Year Rate Differential Factor * Prior Year Whole Farm Unit Residual Factor						
Base Premium Rate = MIN (Current Year Base Premium Rate, Prior Year Base Premium Rate * 1.2, .999)		Base Premium Rate	P11	90	9999999999.99999999	Round to 8 decimals.	
Revenue Lookup Rate = MIN(Current Year Base Rate, Prior Year Base Rate * 1.2, 0.9999)		Revenue Lookup Rate	Internal		9999999999.9999	Round to 4 decimals.	
Base Rate = MIN(Current Year Base Rate, Prior Year Base Rate * 1.2, 0.999)		Base Rate	Internal		999.99999999	Round to 8 decimals.	

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### Section 3: Unit Discount Calculation

For all Combo Commodities, if the chosen Unit Structure is Optional Units, the appropriate discount factor should be looked up and applied.

When Commodity Code is NOT EQUAL to Wheat, "0011", Cotton, "0021", Corn, "0041", or Soybeans, "0081".

Unit Structure Discount Factor	=	When the Unit Structure Code is Optional Unit, "OU":  1.0	Unit Structure Discount Factor	Internal		9.99999999	Round to 8 decimals.	
	=	When Unit Structure Code is Basic Unit, "BU": Basic Unit Discount Factor	Basic Unit Discount Factor	ADM		9.999	None	Edit with ADM Unit Discount, "A01090".
	=	When the Unit Structure Code is Enterprise Unit, "EU": Basic Unit Discount Factor * Enterprise Unit Discount Factor	Enterprise Unit Discount Factor	ADM		9.999	None	Edit with ADM Unit Discount, "A01090".  Enterprise Units will now mandate that all insured acreage for a commodity will be included in the Enterprise Unit. This includes both fall and spring planted acreage.  Enterprise Unit Discount Factor is contingent upon the sum of the reported acres which were not prevented from planting for all applicable units being Greater Than the Area Low Quantity and less than Area High Quantity fields contained on the ADM Unit Discount, "A01090".

When Commodity Code is EQUAL to Wheat, "0011", Cotton, "0021", Corn, "0041", or Soybeans, "0081".

Total Liability Amount = $\sum$ Premium Liability Amount for all records within the Insured unit for the Commodity	Total Liability Amount	Internal		9999999999	Round to whole	
	Premium Liability Amount	Internal		9999999999	None	
Proportion Liability Type Amount = $\frac{\sum \text{Premium Liability Amount by Type within the Insured Unit}}{\text{Total Liability Amount}}$	Proportion Liability Type Amount	Internal		999999.99999999	Round to 8 decimals.	
Proportion Liability Practice Amount = $\frac{\sum \text{Premium Liability Amount by Practice within the Insured Unit}}{\text{Total Liability Amount}}$	Proportion Liability Practice Amount	Internal		999999.99999999	Round to 8 decimals.	

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<b>Calculations</b>		<b>Field Name</b>	<b>Record Number</b>	<b>d Nu</b>	<b>Field Format</b>	<b>Field Rounding</b>
Proportion Liability Unit Amount = $\sum \text{Premium Liability Amount by Record} / \text{Total Liability Amount}$		Proportion Liability Unit Amount	Internal		999999.99999999	Round to 8 decimals.
Average Raw Rate = $\sum_{i=1}^{\text{number of units}} \text{Round}((\text{Reference Rate}_i + \text{Fixed Rate}_i) * \text{Proportion Liability Unit Amount}_i, 8)$		Average Raw Rate	Internal		9999999.99999999	Round to 8
		Reference Rate	ADM		9.9999	None
		Fixed Rate	ADM		9.9999	None
Average Base Rate = $\sum_{i=1}^{\text{number of units}} \text{Round}((\text{Base Rate}_i) * \text{Proportion Liability Unit Amount}_i, 8)$		Average Base Rate	Internal		99999999.99999999	Round to 8
		Base Rate	ADM		99999999.99999999	None
Average Base Premium Rate = $\sum_{i=1}^{\text{number of units}} \text{Round}((\text{Base Premium Rate}_i) * \text{Proportion Liability Unit Amount}_i, 8)$		Average Base Premium Rate	Internal		99999999.99999999	Round to 8 decimals.
		Base Premium Rate	P11	91	999999.99999999	None

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<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
$\text{Predicted Value Quantity} = \text{Intercept Coefficient} + \text{Total Reported Acreage} * \text{Total Unit Size Coefficient} + \text{Average Raw Rate} * \text{Average County Base Rate Coefficient} + \sum \text{Proportion Liability Type Amount}_i * \text{Type Coefficient}_i + \sum \text{Proportion Liability Practice Amount}_i * \text{Practice Coefficient}_i$	Predicted Value Quantity	Internal		999999.99999999	Round to 8	
	Intercept Coefficient	ADM		\$9.9999	None	Edit with ADM Unit Discount, "A01090".  When pulling the Intercept Coefficient, Total Unit Size Coefficient, Average County Base Rate Coefficient, and Standard Deviation Quantity, the values should be the same for a given commodity and coverage level percent although they may have different Unit Id's. The reason for the different Unit Id's is to account for the Type Coefficients and Practice Coefficients which will vary by the type and practice in each unit and coverage level percent.
	Total Reported Acreage	ADM		9.9999999	None	Edit with ADM Unit Discount, "A01090".  Total Reported Acreage refer to the sum of the Reported Acreage which were not prevented from Planting for the unit.
	Average Raw Rate * Average County Base Rate Coefficient	ADM		99.9999	None	Edit with ADM Unit Discount, "A01090".
	Proportion Liability Type * Type Coefficient	ADM		9.9999	None	Edit with ADM Unit Discount, "A01090".
	Proportion Liability Practice * Practice Coefficient	ADM		9.9999	None	Edit with ADM Unit Discount, "A01090".



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Calculations	Field Name	Record Number	d. Nu	Field Format	Field Rounding	Rules
Cumulative Distribution Function (CDF) = IF (Predicted Value Quantity / Standard Deviation Quantity ) < 0: 0.39894228 * EXP(-(Predicted Value/ Standard Deviation Quantity) <sup>2</sup> /2) x [0.31938153 * (1/ (1-0.2316419 * (Predicted Value Quantity/ Standard Deviation Quantity))) – 0.356563782 * (1/ (1-0.2316419 * (Predicted Value Quantity/ Standard Deviation Quantity))) <sup>2</sup> + 1.781477937 * (1/ (1-0.2316419 * (Predicted Value Quantity/ Standard Deviation Quantity))) <sup>3</sup> – 1.821255978 * (1/ (1-0.2316419 * (Predicted Value Quantity/ Standard Deviation Quantity))) <sup>4</sup> + 1.330274429 * (1/ (1-0.2316419 * (Predicted Value Quantity/ Standard Deviation Quantity))) <sup>5</sup> ]	CDF	Internal		999999.99999999	Round to 8 decimals.	
	Standard Deviation Quantity	ADM		999.999999999	None	Edit with ADM Unit Discount, "A01090".

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<b>IF (Predicted Value Quantity / Standard Deviation Quantity) <math>\geq 0</math>:</b> $1 - 0.39894228 * \text{EXP}(-(\text{Predicted Value Quantity} / \text{Standard Deviation Quantity})^2 / 2) \times$ $[0.31938153 * (1 / (1 + 0.2316419 * (\text{Predicted Value Quantity} / \text{Standard Deviation Quantity}))) -$ $0.356563782 * (1 / (1 + 0.2316419 * (\text{Predicted Value Quantity} / \text{Standard Deviation Quantity})))^2 +$ $1.781477937 * (1 / (1 + 0.2316419 * (\text{Predicted Value Quantity} / \text{Standard Deviation Quantity})))^3 -$ $1.821255978 * (1 / (1 + 0.2316419 * (\text{Predicted Value Quantity} / \text{Standard Deviation Quantity})))^4 +$ $1.330274429 * (1 / (1 + 0.2316419 * (\text{Predicted Value Quantity} / \text{Standard Deviation Quantity})))^5]$ Cumulative Distribution Function (CDF) =	CDF	Internal		999999.99999999	Round to 8 decimals.		
	Standard Deviation Quantity	ADM		999.999999999	None	Edit with ADM Unit Discount, "A01090".	
Probability Distribution Function (PDF) = $0.39894228 * \text{EXP}(-(\text{Predicted Value Quantity} / \text{Standard Deviation Quantity})^2 / 2)$	PDF	Internal		999999.99999999	Round to 8 decimals.		
	Standard Deviation Quantity	ADM		999.999999999	None	Edit with ADM Unit Discount, "A01090".	
Expected Normalized LCR Difference = $\text{Predicted Value Quantity} * \text{CDF} + \text{Standard Deviation Quantity} * \text{PDF}$	Expected Normalized LCR Difference	Internal		9999999999.99999999	Round to 8 decimals.		
	Standard Deviation Quantity	ADM		999.999999999	None	Edit with ADM Unit Discount, "A01090".	
Yield Protection LCR Difference Quantity = $\text{Average Base Rate} * \text{Expected Normalized LCR Difference}$	Yield Protection LCR	Internal		999999.99999999	Round to 8 decimals.		
Unit Structure Discount Factor = $\text{MAX} [0.60, (\text{Average Base Premium Rate} - \text{Yield Protection LCR Difference Quantity}) / \text{Average Base Premium Rate}]$	Unit Structure Discount Factor	Internal		9.99999999	Round to 8 decimals.		

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#### Section 4: Optional Coverage

The Biotech Endorsement (BE) will be treated as a normal option and its rate will be applied in this section. In the legacy system the Biotech Endorsement was applied separately with its own field premium discount factor. This will no longer be the case.

<b>When Rate Method Code is Additive, "A":</b>  Additive Optional Rate Adjustment Factor = $\sum \text{Option Rate} * \text{Rate Differential Factor}$	Additive Optional Rate Adjustment Factor	Internal		999999.9999	Round to 4 decimals.	
	Option Rate	ADM		99999.9999	None	Option Rate will be the Sum of all Option Rate with Rate Method Code equal to Additive, "A". Edit with ADM Option Rate, "A01060".
	Rate Differential Factor	ADM		9.99999999	None	Edit with ADM Coverage Level Differential, "A01040".
<b>When Rate Method Code is Multiplicative, "M":</b>  Multiplicative Optional Rate Adjustment Factor = $\sum \text{Option Rate1} * \text{Option Rate2} * \text{Option Rate3}...$	Multiplicative Optional Rate Adjustment Factor	Internal		999999.9999	Round to 4 decimals.	
	Option Rate	ADM		9.9999	None	Edit with ADM Option Rate, "A01060".

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Section 5: Revenue Coverage Add on Rates (Applicable only for Plans 02 and 03)

It is recommended that other than hard coding for specific type and practice codes which will eventually change when the new key structure is adopted, that a condition be put in place that will set the add on rate to 0 when the Price Volatility is 0. This condition MUST occur at some point in order to circumvent the Calculation of Preliminary Revenue Protection Add on Rate and Preliminary Revenue Protection with Harvest Price Exclusion Add on Rate, which contains a constraint that the add on rate be at least 1% greater than the base Premium Rate.

Adjusted Mean Quantity = Approved Yield * Mean Quantity / 100	Adjusted Mean Quantity (AdjMean)	Internal		999999.99999999	Round to 8 decimals.	
	Approved Yield (AY)	P11	47	99999999.99	None	
	Mean Quantity	ADM		999.999999999	None	Edit with ADM Combo Revenue Factor, "A01030".  Search the Combo Revenue Factor, "A01030" for the Mean Quantity, When the Revenue Lookup Rate = Base Rate
Adjusted Standard Deviation Quantity = Approved Yield * Standard Deviation Quantity / 100	Adjusted Standard Deviation Quantity (AdjStdDev)	Internal		999999999.99999999	Round to 8 decimals.	
	Approved Yield (AY)	P11	47	99999999.99	None	
	Standard Deviation Quantity	ADM		999.999999999	None	Edit with ADM Combo Revenue Factor, "A01030".  Search the Combo Revenue Factor "A01030" for the Standard Deviation Quantity, When the Revenue Lookup Rate = Base Rate
LnVar = Ln((Price Volatility Factor)^2 + 1)	Log Variance Quantity (LnVar)	Internal		999999.99999999	Round to 8 decimals.	
	Price Volatility Factor	ADM		9.99		Edit with ADM Price, "A00810".
LnMean = Ln(Projected Price) – LnVar / 2	log Mean Quantity (LnMean)	Internal		999999.99999999	Round to 8 decimals.	
	Projected Price	ADM		99999.9999		Edit with ADM Price, "A00810".

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Exhibit Number: P11-1, Plan 01, 02, 03  
Record Name: Acreage  
Record Code: P11

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Insurance Plan Code		01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion	
Commodity Code		0011 Wheat		0021 Cotton		0078 Sunflower	
		0015 Canola		0041 Corn		0081 Soybeans	
		0018 Rice		0051 Grain Sorghum		0091 Barley	
Calculations		Field Name		Record Number	d Nu	Field Format	Field Rounding
Yield Draw Quantity <sub>Sequence</sub> = Number Yield Draw Quantity		Yield Draw Quantity		ADM		S99.999999999	None
For Sequence Number 1 to 500							Edit with ADM Beta, "A01020".  Use the Beta ID field from ADM Insurance Offer, "A00030" and the Beta "A01020" to obtain the applicable draws. There should be 500 draws (or sequence numbers) per Beta Id for every distinct Beta Id in the Insurance Offer ADM, "A00030".
Price Draw Quantity <sub>Sequence</sub> = Number Price Draw Quantity		Price Draw Quantity		ADM		S99.999999999	None
For Sequence Number 1 to 500							Edit with ADM Beta, "A01020".  Use the Beta ID field from ADM Insurance Offer, "A00030" and the Beta "A01020" to obtain the applicable draws. There should be 500 draws (or sequence numbers) per Beta Id for every distinct Beta Id in the Insurance Offer ADM
Simulated Yield Protection Losses Quantity = $\sum_{i=1}^{500} \text{MAX}(0, AY * \text{covlvi} - \text{MAX}(0, \text{Yield}_i * \text{AdjStdDev} + \text{AdjMean}))$		Simulated Yield Protection Losses Quantity (SimYPLosses)		Internal		999999999.999999999999	None Round to 12 decimals.
		Approved Yield (AY)		P11	47	99999999.99	None
		Coverage Level Percent (covlvi)		P14	33	9.9999	None
		Yield Draw Quantity <sub>i</sub> (Yield <sub>i</sub> )		ADM		S99.999999999	None

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Insurance Plan Code		01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion	
Commodity Code		0011 Wheat		0021 Cotton		0078 Sunflower	
		0015 Canola		0041 Corn		0081 Soybeans	
		0018 Rice		0051 Grain Sorghum		0091 Barley	
Calculations	Field Name	Record Number	d Nu	Field Format	Field Rounding	Rules	
$\text{Simulated Revenue Protection Losses Quantity} = \sum_{i=1}^{500} \text{MAX}(0, \text{AY} * \text{covlvl} * \text{MAX}(\text{ProjPrice}, \text{MIN}(2 * \text{ProjPrice}, e^{(\text{Price}_i * \sqrt{\text{LnVar}} + \text{LnMean})}) - (\text{MAX}(0, \text{Yield}_i * \text{AdjStdDev} + \text{AdjMean}) * \text{MIN}(2 * \text{ProjPrice}, e^{(\text{Price}_i * \sqrt{\text{LnVar}} + \text{LnMean})})))$	Simulated Revenue Protection Losses Quantity(SimRPLosses)	Internal		999999999.999999999999	None Round to 12 decimals.		
	Approved Yield (AY)	P11	47	99999999.99	None		
	Coverage Level Percent (covlvl)	P14	33	9.9999	None		
	Yield Draw Quantity <sub>i</sub> (Yield <sub>i</sub> )	ADM		S99.999999999	None		
	Projected Priced (ProjPrice)	ADM		99999.9999	None	Edit with ADM Price, "A00810".	
$\text{Simulated Revenue Protection with Harvest Price Exclusion Losses Quantity} = \sum_{i=1}^{500} \text{MAX}(0, \text{AY} * \text{covlvl} * \text{ProjPrice} - (\text{MAX}(0, \text{Yield}_i * \text{AdjStdDev} + \text{AdjMean}) * \text{MIN}(2 * \text{ProjPrice}, e^{(\text{Price}_i * \sqrt{\text{LnVar}} + \text{LnMean})})))$	Simulated Revenue Protection with Harvest Price Exclusion Losses Quantity (SimRPhpeLosses)	Internal		999999999.999999999999	None Round to 12 decimals.		
	Approved Yield (AY)	P11	47	99999999.99	None		
	Coverage Level Percent (covlvl)	P14	33	9.9999	None		
$\text{Simulated Yield Protection Base Premium Rate} = (\text{Simulated Yield Protection Losses Quantity} / 500) / (\text{Approved Yield} * \text{Coverage Level Percent})$	Simulated Yield Protection Base Premium Rate	Internal		999999.999999999	Round to 8 decimals.		
$\text{Simulated Revenue Protection Base Premium Rate} = (\text{Simulated Revenue Protection Losses} / 500) / (\text{Approved Yield} * \text{Coverage Level Percent} * \text{Projected Price})$	Simulated Revenue Protection Base Premium Rate	Internal		999999.999999999	Round to 8 decimals.		
$\text{Simulated Revenue Protection with Harvest Price Exclusion Base Premium Rate} = (\text{Simulated Revenue Protection with harvest Price Exclusion Losses Quantity} / 500) / (\text{Approved Yield} * \text{Coverage level Percent} * \text{Projected Price})$	Simulated Revenue Protection with Harvest Price Exclusion Base Premium Rate	Internal		999999.999999999	Round to 8 decimals.		
$\text{Preliminary Revenue Protection Premium Add on Rate} = \text{MAX}(\text{Simulated Revenue Protection Base Premium Rate} - \text{Simulated Yield Protection Base Premium Rate}, 0.01 * \text{Base Premium Rate})$	Preliminary Revenue Protection Premium Add on Rate	Internal		999999.999999999	Round to 8 decimals.	This is a control meant to ensure that the premium rate associated with Revenue Protection is at least 1% greater than the basic Base Premium Rate where the Price Volatility Factor is NOT EQUAL to 0.	

Exhibit Name: Premium Calculation  
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<u>Insurance Plan Code</u>	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion
<u>Commodity Code</u>	0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley

<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
Preliminary Revenue Protection with Harvest Price Exclusion Add on Rate MAX(Simulated Revenue Protection with Harvest Price Exclusion Base Premium Rate - Simulated Yield Protection Base Premium Rate, -0.5 * Base Premium Rate)	Preliminary Revenue Protection with Harvest Price Exclusion Add on Rate	Internal		999999.99999999	Round to 8 decimals.	This is a control meant to ensure that the premium rate associated with Revenue Protection with Harvest Price Exclusion will not be less than half of the Base Premium Rate where the Price Volatility Factor is NOT EQUAL to 0.

Section 6: Historical Revenue Capping (Applicable only for Plans 02 and 03)

This section is for calculation the 2010 Revenue Assurance Optional Unit Level Base Premium Rate for coverage level percents 65 thru 85 where applicable. Then it is used in conjunction with the Base Premium Rate and Revenue Add On Rates to compute capped Revenue Add On Rates. This table is set up such that the only value that will change from year to year is the Commodity Year. By doing this we are fixing a point where the premium calculation method was changed and applying an exponential capping over time.

If there is NOT a corresponding row in the Historical Revenue Capping ADM, "A01110", then this calculation does not need to be performed. Furthermore, since coverage level percents 50, 55, 60 did not exist for Revenue Assurance (RA) historically capping does not need to be performed for those coverage level percents as well.

Capping Yield Ratio = Rate Yield / Capping Reference Yield	Capping Yield Ratio	Internal		9.99	Round to 2 decimals.	Cup at 0.50 and Cap at 1.50.
	Rate Yield	P15	38	99999999.99	None	
	Capping Reference Yield	ADM		99999.99	None	Edit with ADM Historical Revenue Capping, "A01110".
Prior Capping Yield Ratio = Rate Yield / Prior Capping Reference Yield	Prior Capping Yield Ratio	Internal		9.99	Round to 2 decimals.	Cup at 0.50 and Cap at 1.50.
	Rate Yield	P15	38	99999999.99	None	
	Prior Capping Reference Yield	ADM		99999.99	None	Edit with ADM Historical Revenue Capping, "A01110".

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<b>Insurance Plan Code</b>		01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion		
<b>Commodity Code</b>		0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley		
<b>Calculations</b>		<b>Field Name</b>	<b>Record Number</b>	<b>d Nu</b>	<b>Field Format</b>	<b>Field Rounding</b>
Capping Rate Multiplier = Capping Yield Ratio ^Capping Exponent Value		Capping Rate Multiplier	Internal		999999.99999999	Round to 8 decimals.
		Capping Exponent Value	ADM		\$99.999	None Edit with ADM Historical Revenue Capping, "A01110".
Prior Capping Rate Multiplier = Prior Capping Yield Ratio ^Prior Capping Exponent Value		Prior Capping Rate Multiplier	Internal		999999.99999999	Round to 8 decimals.
		Prior Capping Exponent Value	ADM		\$99.999	None Edit with ADM Historical Revenue Capping, "A01110".
Historical Capping Base Rate =	<b>If Rate Method Code = Fixed, "F":</b>	Historical Capping Base Rate	Internal		999999.99999999	Round to 8 decimals.
	<b>If Rate Method Code = Additive, "A":</b>	Sub County Rate				
	Sub County Rate + (Capping Rate Multiplier * Capping Reference Rate + Capping Fixed Rate)	Sub County Rate	ADM		9.9999	None Edit with ADM Sub County Rate, "A01050".
	<b>If Rate Method Code = Multiplicative, "M":</b>	Capping Reference Rate	ADM		9.9999	Edit with ADM Historical Revenue Capping, "A01110".
	<b>Otherwise:</b>	Capping Fixed Rate	ADM		9.9999	Edit with ADM Historical Revenue Capping, "A01110".
(Capping Rate Multiplier * Capping Reference Rate + Capping Fixed Rate)						



Exhibit Name: Premium Calculation  
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Insurance Plan Code		01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion	
Commodity Code		0011 Wheat		0021 Cotton		0078 Sunflower	
		0015 Canola		0041 Corn		0081 Soybeans	
		0018 Rice		0051 Grain Sorghum		0091 Barley	
Calculations		Field Name	Record Number	d Nu	Field Format	Field Rounding	Rules
Historical Prior Capping Base Rate =	If Rate Method Code = Fixed "F":	Historical Prior Capping Base Rate	Internal		999999.99999999	Round to 8 decimals.	
	Sub County Rate						
	If Rate Method Code = Additive, "A":	Sub County Rate	ADM		9.9999	None	Edit with ADM Sub County Rate, "A01050".
	Sub County Rate + (Prior Capping Rate Multiplier * Prior Capping Reference Rate + Prior Capping Fixed Rate)						
	If Rate Method Code = Multiplicative, "M":	Prior Capping Reference Rate	ADM		9.9999		Edit with ADM Historical Revenue Capping, "A01110".
	Sub County Rate * (Prior Capping Rate Multiplier * Prior Capping Reference Rate + Prior Capping Fixed Rate)						
	Otherwise:	Prior Capping Fixed Rate	ADM		9.9999		Edit with ADM Historical Revenue Capping, "A01110".
	(Prior Capping Rate Multiplier * Prior Capping Reference Rate + Prior Capping Fixed Rate)						
Historical Basic Unit Base Rate = .9 * MIN(.999, Historical Prior Capping Base Rate * 1.2, Historical Capping Base Rate)		Historical Basic Unit Base Rate	Internal		999999.99999999	Round to 8 decimals.	

**Exhibit Name:** Premium Calculation  
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<u>Insurance Plan Code</u>		01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion	
<u>Commodity Code</u>		0011 Wheat		0021 Cotton		0078 Sunflower	
		0015 Canola		0041 Corn		0081 Soybeans	
		0018 Rice		0051 Grain Sorghum		0091 Barley	
<u>Calculations</u>		<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
Historical Revenue Protection Base Premium = Rate $  \begin{aligned}  &[\text{beta0 Factor} + \\  &\text{Beta 1 Factor} * \text{Historical Basic Unit Base Rate} + \text{Beta 2 Factor} \\  &* \text{Historical Basic Unit Base Rate}^2 + \text{Beta 3 Factor} * \\  &\text{Coverage Level Percent} + \\  &\text{Beta 4 Factor} * \text{Coverage Level Percent}^2 + \\  &\text{Beta 5 Factor} * \text{Approved Yield} / \text{Capping Reference Yield} + \\  &\text{Beta 6 Factor} * (\text{Approved Yield} / \text{Capping Reference Yield})^2 \\  &+ \\  &\text{Beta 7 Factor} * \text{Price Volatility Factor} + \\  &\text{Beta 8 Factor} * \text{Price Volatility Factor}^2 + \\  &\text{Beta 9 Factor} * \text{Historical Basic Unit Base Rate} * \text{Coverage} \\  &\text{Level Percent} + \\  &\text{Beta 10 Factor} * \text{Historical Basic Unit Base Rate} * \text{Approved} \\  &\text{Yield} / \text{Capping Reference Yield} + \\  &\text{Beta 11 Factor} * \text{Historical Basic Unit Base Rate} * \text{Price} \\  &\text{Volatility Factor} + \\  &\text{Beta 12 Factor} * \text{Coverage Level Percent} * \text{Approved Yield} / \\  &\text{Capping Reference Yield} + \\  &\text{Beta 13 Factor} * \text{Coverage Level Percent} * \text{Price Volatility} \\  &\text{Factor} + \\  &\text{Beta 14 Factor} * (\text{Approved Yield} / \text{Capping Reference Yield}) \\  &* \text{Price Volatility Factor}] * \text{Unit Residual Factor} * 1.1  \end{aligned}  $		Historical Revenue Protection Base Premium Rate	Internal		9999999999.99999999	Round each intermittent Beta * calculation to 8 decimals as it has been done historically.	
		Beta 0 Factor - Beta 14 Factor	ADM		S99.999999999	None	Edit with ADM Historical Revenue Capping, "A01110".
		Price Volatility Factor	ADM		9.99	None	Edit with ADM Price, "A00810".

**Exhibit Name:** Premium Calculation  
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<u>Insurance Plan Code</u>		01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion	
<u>Commodity Code</u>		0011 Wheat		0021 Cotton		0078 Sunflower	
		0015 Canola		0041 Corn		0081 Soybeans	
		0018 Rice		0051 Grain Sorghum		0091 Barley	
<u>Calculations</u>		<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
[beta0 Factor + Beta 1 Factor * Historical Basic Unit Base Rate + Beta 2 Factor * Historical Basic Unit Base Rate ^2 + Beta 3 Factor * Coverage Level Percent + Beta 4 Factor * Coverage Level Percent ^2 + Beta 5 Factor * Approved Yield / Capping Reference Yield + Beta 6 Factor * (Approved Yield / Capping Reference Yield)^2 + Beta 7 Factor * Price Volatility Factor + Beta 8 Factor * Price Volatility Factor^2 + Beta 9 Factor * Historical Basic Unit Base Rate * Coverage Level Percent + Beta 10 Factor * Historical Basic Unit Base Rate * Approved Yield / Capping Reference Yield + Beta 11 Factor * Historical Basic Unit Base Rate * Price Volatility Factor + Beta 12 Factor * Coverage Level Percent * Approved Yield / Capping Reference Yield + Beta 13 Factor * Coverage Level Percent * Price Volatility Factor + Beta 14 Factor * (Approved Yield / Capping Reference Yield) * Price Volatility Factor ] * Unit Residual Factor X 1.1  Historical Revenue Protection with Harvest Price Exclusion Base Premium Rate =		Historical Revenue Protection with Harvest Price Exclusion Base Premium Rate	Internal		9999999999.99999999	Round each intermittent Beta * calculation to 8 decimals as it has been done historically.	
		Beta 0 Factor - Beta 14 Factor	ADM		S99.999999999	None	Edit with ADM Historical Revenue Capping, "A01110".
		Price Volatility Factor	ADM		9.99	None	Edit with ADM Price, "A00810".

Exhibit Name: Premium Calculation  
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<b>Insurance Plan Code</b>	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion
<b>Commodity Code</b>	0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley

<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
Capped Revenue Protection Add on Rate = $\frac{\text{MIN}(\text{Base Premium Rate} + \text{Preliminary Revenue Protection Add On Rate, Historical Revenue Protection Base Premium Rate} * 1.2^{(\text{Commodity Year} - \text{Capping Year}))} - \text{Base Premium Rate}}{\text{Rate}}$	Capped Revenue Protection Add on Rate	Internal		9999999999.99999999	Round to 8 decimals.	Use the Preliminary Add On Rates for Insurance Plan Code Revenue Protection, "02" or Revenue Protection with Harvest Price Exclusion, "03" from section 5, the Base Premium Rate from section 2 to calculate the Capped Revenue add on factors.
	Base Premium Rate	P11	91	999999.99999999	None	
	Commodity Year	P14	10	CCYY	None	
	Capping Year	ADM		CCYY	None	Edit with ADM Historical Revenue Capping, "A01110".
Capped Revenue Protection with Harvest Price Exclusion Add on Rate = $\frac{\text{MIN}(\text{Base Premium Rate} + \text{Preliminary Revenue Protection with Harvest Price Exclusion Add On Rate, Historical Revenue Protection with Harvest Price Exclusion Base Premium Rate} * 1.2^{(\text{Commodity Year} - \text{Capping Year}))} - \text{Base Premium Rate}}{\text{Rate}}$	Capped Revenue Protection with Harvest Price Exclusion Add on Rate	Internal		9999999999.99999999	Round to 8 decimal	Use the Preliminary Add On Rates for Insurance Plan Code Revenue Protection, "02" or Revenue Protection with Harvest Price Exclusion, "03" from section 5, the Base Premium Rate from section 2 to calculate the Capped Revenue add on factors.
	Base Premium Rate	P11	91	999999.99999999	None	
	Commodity Year	P14	10	CCYY	None	
	Capping Year	ADM		CCYY	None	Edit with ADM Historical Revenue Capping, "A01110".

Section 7: Whole Farm Unit Base Premium Rate

The Whole Farm Unit Discount is only applicable to the Revenue Protection and Revenue Protection with Harvest Price Exclusion Insurance Plans, unless the Special Provisions allow Whole Farm Units for other Insurance Plans.

Whole Farm Units will now mandate that producers include both their spring and fall planted commodities into the whole farm unit for commodity/plans offering Whole Farm Units.

Malting Barley Coverage is NOT applicable for Whole Farm Unit. Malting Barley Coverage is provided as a separate Basic Unit.

Exhibit Name: Premium Calculation  
Exhibit Number: P11-1, Plan 01, 02, 03  
Record Name: Acreage  
Record Code: P11

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<u>Insurance Plan Code</u>	01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion	
<u>Commodity Code</u>	0011 Wheat		0021 Cotton		0078 Sunflower	
	0015 Canola		0041 Corn		0081 Soybeans	
	0018 Rice		0051 Grain Sorghum		0091 Barley	
<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d. Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
$\text{Mean Quantity}_{\text{commodityj}} = \frac{\text{Mean Quantity}_{\text{commodityj}} \text{ WHERE Revenue Lookup Rate}_{\text{commodityj}}}{\text{Base Rate}_{\text{commodityj}}}$	Mean Quantity <sub>commodityj</sub>	ADM		999.999999999	None	Edit with ADM Combo Revenue Factor, "A01030".  Search the Combo Revenue Factor, "A01030" for the Mean Quantity, When the Revenue Lookup Rate = Base Rate
	Revenue Lookup Rate <sub>commodityj</sub>	Internal		9.9999	None	
	Base Rate <sub>commodityj</sub>	ADM		9.9999	None	Edit with ADM Combo Revenue Factor, "A01030".
$\text{Standard Deviation Quantity}_{\text{commodityj}} = \frac{\text{Standard Deviation Quantity}_{\text{commodityj}} \text{ WHERE Revenue Lookup Rate}_{\text{commodityj}}}{\text{Base Rate}_{\text{commodityj}}}$	Standard Deviation Quantity <sub>commodityj</sub>	ADM		999.999999999	None	Edit with ADM Combo Revenue Factor, "A01030".  Search the Combo Revenue Factor, "A01030" for the Standard Deviation Quantity, When the Revenue Lookup Rate = Base Rate
	Revenue Lookup Rate <sub>commodityj</sub>	Internal		9.9999	None	
	Base Rate <sub>commodityj</sub>	ADM		9.9999	None	Edit with ADM Combo Revenue Factor, "A01030".
$\text{Adjusted Mean Quantity}_{\text{commodityj}} = \text{Approved Yield}_{\text{commodityj}} * \text{Mean Quantity}_{\text{commodityj}} / 100$	Adjusted Mean Quantity <sub>commodityj</sub>	Internal		999999.999999999	Round to 8 decimals.	
	Approved Yield <sub>commodityj</sub>	P11	47	99999999.99	None	
$\text{Adjusted Standard Deviation Quantity}_{\text{commodityj}} = \frac{\text{Approved Yield}_{\text{commodityj}} * \text{Standard Deviation Quantity}_{\text{commodityj}}}{100}$	Adjusted Standard Deviation Quantity <sub>commodityj</sub>	Internal		999999999.999999999	Round to 8 decimals.	
	Approved Yield <sub>commodityj</sub>	P11	47	99999999.99	None	
$\text{LnVariance}_{\text{commodityj}} = \ln((\text{Price Volatility Factor}_{\text{commodityj}})^2 + 1)$	Log Variancecommodityj (LnVar)	Internal		999999.999999999	Round to 8 decimals.	
	Price Volatility Factor <sub>commodityj</sub>	ADM		9.99	None	Edit with ADM Price, "A00810".

**Exhibit Name:** Premium Calculation  
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<b>Insurance Plan Code</b>	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion			
<b>Commodity Code</b>	0011 Wheat	0021 Cotton	0078 Sunflower			
	0015 Canola	0041 Corn	0081 Soybeans			
	0018 Rice	0051 Grain Sorghum	0091 Barley			
<b>Calculations</b>	<b>Field Name</b>	<b>Record Number</b>	<b>d Nu</b>	<b>Field Format</b>	<b>Field Rounding</b>	<b>Rules</b>
$\text{LnMean}_{\text{commodityj}} = \ln(\text{Projected Price}_{\text{commodityj}}) - \text{LnVariance}_{\text{commodityj}} / 2$	log Mean <sub>commodityj</sub> (LnMean)	Internal		999999.99999999	Round to 8 decimals.	
	Projected Price <sub>commodityj</sub>	ADM		99999.9999		Edit with ADM Price, "A00810".
$\text{Yield Draw Quantity}_{\text{commodityj Sequence Number}} = \text{Yield Draw Quantity}_{\text{commodityj}}$	Yield Draw Quantity	ADM		S99.999999999	None	ADM Insurance Offer, "A00030", and Beta, "A01020", should be used to obtain the applicable draws. There should be 500 Draws (or sequence numbers) per Beta Id in the ADM Beta, "A01020" for every distinct Beta Id in the ADM Insurance Offer, "A00030".
$\text{Price Draw Quantity}_{\text{commodityj Sequence Number}} = \text{Price Draw Quantity}_{\text{commodityj}}$	Price Draw Quantity	ADM		S99.999999999	None	ADM Insurance Offer, "A00030", and Beta, "A01020", should be used to obtain the applicable draws. There should be 500 Draws (or sequence numbers) per Beta Id in the ADM Beta, "A01020" for every distinct Beta Id in the ADM Insurance Offer, "A00030".

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Exhibit Number: P11-1, Plan 01, 02, 03  
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Insurance Plan Code	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion			
Commodity Code	0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley			
Calculations	Field Name	Record Number	d Nu	Field Format	Field Rounding	Rules
<div>500 all Commodities</div> <div><math display="block">\sum_{i=1}^{500} \text{MAX}(0, \text{covlvi}) * (\sum_{j=1}^{\text{all Commodities}} \text{AY}_{\text{commodityj}} * \text{Acres}_{\text{commodityj}} * \text{MAX}(\text{ProjPrice}_{\text{commodityj}}, \text{MIN}(2 * \text{ProjPrice}_{\text{commodityj}}, e^{(\text{Price}_{\text{commodityji}} * \sqrt{\text{LnVar}_{\text{commodityj}} + \text{LnMean}_{\text{commodityj}})}) - \text{MAX}(0, (\text{Yield}_{\text{commodityji}} * \text{AdjStdDev}_{\text{commodityj}} + \text{AdjMean}_{\text{commodityj}})) * \text{MIN}(2 * \text{ProjPrice}_{\text{commodityj}}, e^{(\text{price}_{\text{commodityji}} * \sqrt{\text{LnVar}_{\text{commodityj}} + \text{LnMean}_{\text{commodityj}})}) * (\text{Acres}_{\text{commodityj}})))</math></div> <div>Simulated Revenue Protection Losses Whole Farm =</div>	Simulated Revenue Protection Losses Whole Farm (SimRPLossesWF)	Internal		999999999.999999999	None Round to 12 decimals.	Simulated Revenue Protection Losses for All Commodity/Acreage report line in the Whole Farm Unit.
	Coverage Level Percent (covlvi)	P14	33	9.9999	None	
	Approved Yield <sub>commodityj</sub> (AY)	P11	47	99999999.99	None	Approved Yield for each Commodity/Acreage report line in the Whole Farm Unit.
	Reported Acreage <sub>commodityj</sub> (Acres)	P11	52	999999.99	None	Reported Acreage must equal the sum of all Land, P27, Reported Acreage.  Reported Acreage for each Commodity/Acreage report line in the Whole Farm Unit.
	Projected Price <sub>commodityj</sub> (ProjPrice)	ADM		99999.9999	None	Edit with ADM Price, "A00810".  Projected Price for each Commodity/Acreage report line in the Whole Farm Unit.
	Price Draw Quantity <sub>commodityj</sub> (Price)	ADM		S99.999999999	None	Price Draw Quantity for each Commodity /Acreage report line in the Whole Farm Unit.
	Log Variance <sub>commodityj</sub> (LnVar)	Internal		999999.999999999	None	Log Variance for each Commodity/Acreage report line in the Whole Farm Unit.
	log Mean <sub>commodityj</sub> (LnMean)	Internal		999999.999999999	None	Log Mean for each Commodity/Acreage report line in the Whole Farm Unit.
	Yield Draw Quantity <sub>commodityj</sub> (Yield)	ADM		S99.999999999	None	Yield Draw Quantity for each Commodity/Acreage report line in the Whole Farm Unit.
	Adjusted Standard Deviation Quantity <sub>commodityj</sub> (AdjStnDev)	Internal		9999999999.999999999	None	Adjusted Standard Deviation Quantity for each Commodity/Acreage report line in the Whole Farm Unit.
	Adjusted Mean Quantity <sub>commodityj</sub> (AdjMean)	Internal		999999.9999999999	None	Adjusted Mean Quantity for each Commodity/Acreage report line in the Whole Farm Unit.

Exhibit Name: Premium Calculation  
Exhibit Number: P11-1, Plan 01, 02, 03  
Record Name: Acreage  
Record Code: P11

Reinsurance Year: 2011  
Version: DRAFT  
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<b>Insurance Plan Code</b>	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion
<b>Commodity Code</b>	0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley

Calculations	Field Name	Record Number	d Nu	Field Format	Field Rounding	Rules
$\text{Simulated Revenue Protection Harvest Price Excluded Losses Whole Farm} = \sum_{i=1}^{500} \text{MAX}(0, \text{covlvi} * \sum_{j=\text{all commodities}} (\text{AY}_{\text{commodityj}} * \text{ProjPrice}_{\text{commodityj}} * \text{Acres}_{\text{commodityj}}) - \text{MAX}(0, (\text{Yield}_{\text{commodityji}} * \text{AdjStdDev}_{\text{commodityj}} + \text{AdjMean}_{\text{commodityj}})) * \text{MIN}(2 * \text{ProjPrice}_{\text{commodityj}}, \text{price}_{\text{commodityji}} * \sqrt{\text{LnVar}_{\text{commodityj}}} = \text{LnMean}_{\text{commodityj}})) * (\text{Acres}_{\text{commodityj}}))$	Simulated Revenue Protection Harvest Price Excluded Losses Whole Farm (SimRPhpeLossesWF)	Internal		9999999999.999999999999	None Round to 12 decimals.	Simulated Revenue Protection Harvest Price Excluded Losses for All Commodity/Acreage report lines in the Whole Farm Unit.
	Coverage Level Percent (covlvi)	P14	33	9.9999	None	
	Approved Yield <sub>commodityj</sub> (AY)	P11	47	99999999.99	None	Approved Yield for each Commodity/Acreage report line in the Whole Farm Unit.
	Reported Acreage <sub>commodityj</sub> (Acres)	P11	52	999999.99	None	Reported Acreage must equal the sum of all Land, P27, Reported Acreage.  Reported Acreage for each Commodity/Acreage report line in the Whole Farm Unit.
	Projected Price <sub>commodityj</sub> (ProjPrice)	ADM		99999.9999	None	Edit with ADM Price, "A00810".  Projected Price for each Commodity/Acreage report line in the Whole Farm Unit.
	Yield Draw Quantity <sub>commodityj</sub> <sup>i</sup> (Yield)	ADM		\$99.999999999	None	Yield Draw Quantity for each Commodity/Acreage report line in the Whole Farm Unit.
	Adjusted Standard Deviation Quantity <sub>commodityj</sub> (AdjStdDev)	Internal		9999999999.99999999	None	Adjusted Standard Deviation Quantity for each Commodity/Acreage report line in the Whole Farm Unit.
	Adjusted Mean Quantity <sub>commodityj</sub> (AdjMean)	Internal		999999.999999999	None	Adjusted Mean Quantity for each Commodity/Acreage report line in the Whole Farm Unit.
	Price Draw Quantity <sub>commodityj</sub> <sup>i</sup> (Price)	ADM		\$99.999999999	None	Price Draw Quantity for each Commodity/Acreage report line in the Whole Farm Unit.
	Log Variance <sub>commodityj</sub> (LnVar)	Internal		999999.999999999	None	Log Variance for each Commodity/Acreage report line in the Whole Farm Unit.
	Log Mean <sub>commodityj</sub> (LnMean)	Internal		999999.999999999	None	Log Mean for each Commodity/Acreage report line in the Whole Farm Unit.



**Exhibit Name:** Premium Calculation  
**Exhibit Number:** P11-1, Plan 01, 02, 03  
**Record Name:** Acreage  
**Record Code:** P11

**Reinsurance Year:** 2011  
**Version:** DRAFT  
**Release Date:** 9/30/2010

<u>Insurance Plan Code</u>		01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion	
<u>Commodity Code</u>		0011 Wheat		0021 Cotton		0078 Sunflower	
		0015 Canola		0041 Corn		0081 Soybeans	
		0018 Rice		0051 Grain Sorghum		0091 Barley	
<u>Calculations</u>		<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
$\text{Revenue Protection Whole Farm Rate} = \frac{\text{SimRPLossesWF}}{500}$ $= \frac{\text{covl} \sum_{j=\text{all commodities}} (\text{AY}_{\text{commodityj}} * \text{ProjPrice}_{\text{commodityj}} * \text{Acres}_{\text{commodityj}})}{\text{Acres}_{\text{commodityj}}}$		Revenue Protection Whole Farm Rate	Internal		999999999.99999999	None	
$\text{Revenue Protection with Harvest Price Exclusion Whole Farm Rate} = \frac{\text{SimRPhpeLossesWF}}{500}$ $= \frac{\text{covl} \sum_{j=\text{all commodities}} (\text{AY}_{\text{commodityj}} * \text{ProjPrice}_{\text{commodityj}} * \text{Acres}_{\text{commodityj}})}{\text{Acres}_{\text{commodityj}}}$		Revenue Protection with Harvest Price Exclusion Whole Farm Rate	Internal		999999999.99999999	None	
<b>When Insurance Plan Code equals Revenue Protection, "02":</b> Whole Farm Base Premium Rate = Revenue Protection Whole Farm Rate		Whole Farm Base Premium Rate	Internal		999999999.99999999	None	
<b>When Insurance Plan Code equals Revenue Protection with Harvest Price Exclusion, "03":</b> Whole Farm Base Premium Rate = Revenue Protection with Harvest Price Exclusion Whole Farm Rate		Whole Farm Base Premium Rate	Internal		999999999.99999999	None	

**Exhibit Name:** Premium Calculation  
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**Reinsurance Year:** 2011  
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<b>Insurance Plan Code</b>	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion
<b>Commodity Code</b>	0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley

<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
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Section 8: Premium Rate	The Premium Rate for ALL Unit Structures should be capped at .999 in the event various adjustments to the Base Premium Rate would cause it to exceed 1.0.
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<b>When Unit Structure Code equals Whole Farm Unit, "WU":</b>  $\text{Premium Rate} = \text{MIN}(.999, \text{Whole Farm Base Premium Rate} * \text{Multiplicative Optional Rate Adjustment Factor} + \text{Additive Optional Rate Adjustment Factor})$	Premium Rate	Internal		9999999999.99999999	Round to 8 decimals.	For situations where the option factors vary by Commodity, a reported Acreage weighted average of the Option Factors should be used to determine the Multiplicative and Additive Optional Rate adjustments to be used in the computation of the Premium Rate for Whole Farm Unit.
<b>When Unit Structure Code DOES NOT EQUAL Whole Farm Unit, "WU":</b>  $\text{Premium Rate} = \text{MIN}(.999, \text{Base Premium Rate} * \text{Unit Discount Factor} * \text{Multiplicative Optional Rate Adjustment Factor} + \text{Additive Optional Rate Factor} + \text{Capped Revenue Add On Factor})$	Premium Rate	Internal		9999999999.99999999	Round to 8 decimals.	

Section 9: Total Premium Amount, Subsidy Amount, and Producer Premium Amount
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$\text{Preliminary Total Premium} = \text{Premium Liability Amount} * \text{Premium Rate} * \text{Experience Factor} * \text{Premium Surcharge Factor}$	Preliminary Total Premium	Internal		9999999999	Round to whole number.	
	Experience Factor	P11	52	9.999	None	Experience Factor is only applicable for Insurance Plan Code Yield Protection, "01".
	Premium Surcharge Factor					Use when the Approved Yield Had a Cup or Surcharge applied.
$\text{Total Premium Amount} = \text{Preliminary Total Premium} * \text{Multiple Commodity Adjustment Factor}$	Total Premium Amount	P11	89	9999999999	Round to whole number.	
	Multiple Commodity Adjustment Factor	ICE		9999.999	None	Edit with ICE Multiple Cropping, "D00063". Used when there is a first Commodity Loss.
$\text{Subsidy Amount} = \text{Total Premium Amount} * \text{Subsidy Percent}$	Subsidy Amount	P11	87	9999999999	Round to whole number.	
	Subsidy Percent	ADM		9.999	None	Edit with ADM Subsidy Percent, "A00070".
$\text{Producer Premium Amount} = \text{Total Premium Amount} - \text{Subsidy Amount}$	Producer Premium Amount	P11	90	9999999999	Round to whole number.	

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<u>Insurance Plan Code</u>	01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion
<u>Commodity Code</u>	0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley

<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
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Section 10: Malting Barley Options MA & MB	If either the Malting Barley Option A or Malting Barley option B is chosen, a new record(s) will need to be prepared for this endorsement. These record should meet the following criteria: 1) The acreage records for the MA or MB records should be less than or equal to the acreage of the base offer 2) The Base Offer will not have the MA/MB option returned in the option field 3) The Acreage records with the MA or MB option will have the MA or MB option indicated in the option Field.					
	Malting Barley Option A Requirements:  To qualify for this option, the producer must: 1) Provide acceptable Malting Barley sales records for at least the 4 most recent Commodity Years and the number of acres planted to malting varieties. 2) If produced under a contract or price agreement, a copy of the current contract or price agreement must be provided on or before the acreage reporting date if the additional value price from the contract/price agreement is to be used for determining liability.					
	Malting Barley Option B Requirements:  To qualify for this option, the producer must: 1) Have planted Malting Barley for at least one of the three Commodity Years directly preceding the previous Commodity Year 2) Sold at least 75% of the contracted amount for the Commodity Year such contract was applicable 3) Provide a copy of the prior contract and acceptable records of sales.					

**Exhibit Name:** Premium Calculation  
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<u>Insurance Plan Code</u>	01 Yield Protection	02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion		
<u>Commodity Code</u>	0011 Wheat	0021 Cotton		0078 Sunflower		
	0015 Canola	0041 Corn		0081 Soybeans		
	0018 Rice	0051 Grain Sorghum		0091 Barley		
<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
Approved Yield calculated in accordance with the Basic Provisions  Approved Yield = OR  $\Sigma(\text{Number of Bushels} / \text{Reported Acreage}) / \Sigma \text{ number of years}$	Approved Yield	P11	48	99999999.99		According to the Malting Barley Price and Quality Endorsement, the Approved Yield can be based on either the procedures established in the Basic Provisions, or by averaging the yields required to meet the qualifications for Option A.
Premium Guarantee Per Acre Amount = Approved Yield * Coverage Level Percent	Premium Guarantee Per Acre Amount	Internal		99999999.99	If Unit of Measure equals Pounds "LBS", then round to whole number.  If Unit of Measure equals Tons "TONS", then round to 2 decimals.  Otherwise, round to 1 decimal.	
	Approved Yield	P11	47	99999999.99	None	
	Coverage Level Percent	P14	33	9.9999	None	

**Exhibit Name:** Premium Calculation  
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<b>Insurance Plan Code</b>		01 Yield Protection	02 Revenue Protection	03 Revenue Protection with Harvest Price Exclusion		
<b>Commodity Code</b>		0011 Wheat 0015 Canola 0018 Rice	0021 Cotton 0041 Corn 0051 Grain Sorghum	0078 Sunflower 0081 Soybeans 0091 Barley		
<b>Calculations</b>		<b>Field Name</b>	<b>Record Number</b>	<b>d Nu</b>	<b>Field Format</b>	<b>Field Rounding</b>
Price Election Amount = Additional Value Price		Price Election Amount	Internal		9999.9999	None
		<p>Price Election Amount will be set equal to the Additional Value Price. The Additional Value price is the difference between the contract price and regular Barley's Projected Price or the additional value price provided in the ADM if the contract price is not used.</p> <p>1) The Contract Price: a) The sale price per bushel established in the contract or price agreement less the projected price for Barley. b) The amount per bushel (not including discounts or incentives) above the feed barley price that is determined at a later date, provided the method of determining the price is specified in the contract or price agreement. c) If the contract or price agreement has a variable price option, the price OR the method of determining a price that will be treated as the sale price.</p> <p>2) The additional Value price indicated in the actuarial documents: a) if there is no malting barley contract. b) The contract or price agreement was not provided by the acreage reporting date.</p> <p>3) The additional Value price: a) For Option A <b>WILL NOT EXCEED \$1.25</b>. b) For Option B <b>WILL NOT EXCEED \$2.00</b>.</p>				

**Exhibit Name:** Premium Calculation  
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<u>Insurance Plan Code</u>	01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion		
<u>Commodity Code</u>	0011 Wheat		0021 Cotton		0078 Sunflower		
	0015 Canola		0041 Corn		0081 Soybeans		
	0018 Rice		0051 Grain Sorghum		0091 Barley		
<u>Calculations</u>		<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
Reported Acreage (Record 1) = MIN(Total Reported Acreage, Malting Barley Contract 1 Bushels / Approved Yield)		Reported Acreage	Internal			None	There may need to be multiple record is there are multiple contracts and/or there are more acres insured to yield more bushels than the contract(s) call for.  Acreage in excess of contracted acreage will be insured at the additional value price on the actuarial documents.  If there is not enough reported acres to support all of the contracts, Insurance will be limited to what the total reported acreage will support.
Reported Acreage (Record 2) = MIN(Total Reported Acreage - Reported Acreage for Record 1, Malting Barley Contract 2 Bushels / Approved Yield)							
Reported Acreage (Record X) = MIN(Total Reported Acreage - $\sum_{i=1}^{x-1}$ Malting Barley Contract I, malting Barley Contract X)							
Premium Guarantee Per Acre Amount = Approved Yield * Coverage Level Percent		Premium Guarantee Per Acre Amount	Internal		99999999.99	If Unit of Measure equals Pounds "LBS", then round to whole number.  If Unit of Measure equals Tons "TONS", then round to 2 decimals.  Otherwise, round to 1 decimals.	Determine the Premium Guarantee Per Acre Amount and the Guarantee Per Acre Amount <u>for each record</u> .



Exhibit Name: Premium Calculation  
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<u>Insurance Plan Code</u>	01 Yield Protection	02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion		
<u>Commodity Code</u>	0011 Wheat	0021 Cotton		0078 Sunflower		
	0015 Canola	0041 Corn		0081 Soybeans		
	0018 Rice	0051 Grain Sorghum		0091 Barley		
<u>Calculations</u>	<u>Field Name</u>	<u>Record Number</u>	<u>d Nu</u>	<u>Field Format</u>	<u>Field Rounding</u>	<u>Rules</u>
MIN(.999, Base Premium Rate * Unit Discount Factor * Premium Rate = Multiplicative Optional Rate Adjustment Factor+ Additive Optional Rate Factor)	Premium Rate	Internal		9999999999.99999999	Round to 8 decimals.	To Determine the Premium Rate for the Malting Barley Option Records: 1) Use the Rate Yield as determined under normal procedures. 2) Process the Rate Yield through section 2 of these procedures as if it was a normal Yield Protection Plan of Insurance using the rating components for the regular Barley offer. 3) Find the Basic Unit Discount Factor to be applied later from section 3 of these procedures as if it was a normal Yield Protection Plan of Insurance 4) Find the applicable Malting Barley Option Factor to be applied later from section 4. This will be the only option factor applied to a Malting Barley record. 5) Sections 5, 6, 7 are not applicable for MA/MB records.
	Multiplicative Optional Rate Adjustment Factor	Internal		999999.9999		
	Additive Optional Rate Adjustment Factor	Internal		999999.9999		



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Insurance Plan Code	01 Yield Protection		02 Revenue Protection		03 Revenue Protection with Harvest Price Exclusion		
Commodity Code	0011 Wheat		0021 Cotton		0078 Sunflower		
	0015 Canola		0041 Corn		0081 Soybeans		
	0018 Rice		0051 Grain Sorghum		0091 Barley		
Calculations		Field Name	Record Number	d Nu	Field Format	Field Rounding	Rules
Preliminary Total Premium = Premium Liability Amount * Premium Rate * Experience Factor * Premium Surcharge Factor		Preliminary Total Premium	Internal		9999999999	Round to whole number.	
		Experience Factor	P11	52	9.999	None	Experience Factor is only applicable for Insurance Plan Code Yield Protection, "01".
		Premium Surcharge Factor					
Total Premium Amount = Preliminary Total Premium * Multiple Commodity Adjustment Factor		Total Premium Amount	P11	89	9999999999	Round to whole number.	
		Multiple Commodity Adjustment Factor	ICE		9999.999	None	Edit with ICE Multiple Cropping, "D00063".
Subsidy Amount = Total Premium Amount * Subsidy Percent		Subsidy Amount	P11	87	9999999999	Round to whole number.	
		Subsidy Percent	ADM		9.999	None	Edit with ADM Subsidy Percent, "A00070".
Producer Premium Amount = Total Premium Amount - Subsidy Amount		Producer Premium Amount	P11	90	9999999999	Round to whole number.	